

# Canadian Metallurgical Quarterly

---

Volume 31, No. 1, January-March 1992

---

## CONTENTS

### MINERALS AND MINERAL PROCESSING

G. Barbery

- 1 Latest developments in the interpretation of section measurements for liberation—practical aspects

Z. A. Zhou, N. O. Egiebor and L. R. Plitt

- 11 Frother effects on single bubble motion in a water column

### CHEMICAL AND EXTRACTIVE METALLURGY

R. J. Munz and E. J. Chin

- 17 The carbothermic reduction of niobium pentoxide and pyrochlore in the presence of iron in a transferred arc argon plasma

P. J. Tumidajski and M. Blander

- 25 Solubility of  $\text{FeCl}_2$  in molten  $\text{NaCl-AlCl}_3$

S. K. Banerjee and G. A. Irons

- 31 Physical modelling of thermal stratification, bottom build-up and mixing in submerged arc electric smelting

D. Filippou and G. P. Demopoulos

- 41 A reaction kinetic model for the leaching of industrial zinc ferrite particulates in sulphuric acid media

### PHYSICAL METALLURGY AND MATERIALS

S. Sangal and S. Yannacopoulos

- 55 Continuous controlled rolling of a HSLA steel

### MATERIALS PROPERTIES AND PROCESSING

A. Couture, R. Angers, M. R. Krishnadev,  
E. Es-Sadiqi and J. Masounave

- 63 Strip-casting simulation of low carbon aluminum-killed steel

Aihua Luo, W. V. Youdelis and Wenqing Wang

- 73 Measurement of thermal properties for sand molds—a heat balance approach

# Canadian Metallurgical Quarterly

---

Volume 31, No. 2, April-June 1992

---

## CONTENTS

### REVIEW ARTICLE

R. N. Parkins

79 Environment sensitive fracture of metals

### CHEMICAL AND EXTRACTIVE METALLURGY

M. Toedtemeir, B. Dandapani et E. Ghali

95 La corrosion et le diagramme  $E$ -pH de sulfure de plomb

S. C. Koria

105 Studies of the bath mixing intensity in converter steelmaking processes

R. T. C. Choo and J. M. Toguri

113 The electrodynamic behavior of metal and metal sulphide droplets in slags

J. Langlais and R. Harris

127 Strontium extraction by aluminothermic reduction

Bong-Hoon Park and H. Suito

133 Partition of  $TiO_2$  between  $\alpha$ - $Fe_2O_3$  crystal and  $Na_2O$ - $B_2O_3$  melts

### PHYSICAL METALLURGY AND MATERIALS

S. Splinter, C. A. Pickles and C. J. Simpson

141 Carbothermic production of silicon oxynitride

G. K. Adil and S. D. Bhole

151 HAZ hardness and microstructure predictions of arc welded steels — I. Review of predictive models

S. D. Bhole and G. K. Adil

159 HAZ hardness and microstructure predictions of arc welded steels — II. CCT diagram method

# Canadian Metallurgical Quarterly

---

Volume 31, No. 3, July-September 1992

---

## CONTENTS

### MINERALS AND MINERAL PROCESSING

A. Maachar and G. S. Dobby

- 167 Measurement of feed water recovery and entrainment solids recovery in flotation columns

### CHEMICAL AND EXTRACTIVE METALLURGY

D. Schab and K. Hein

- 173 Problems of anodic and cathodic mass transfer in copper refining electrolysis with increased current density

W. Dresler and A. McLean

- 181 The extraction of ferrochromium in the presence of nickel from Bird River chromite ores

Duomo Zhang, T. Azakami and  
A. Yazawa

- 189 Utilization of alcohols for the dehydration of magnesium chloride

### PHYSICAL METALLURGY AND MATERIALS

B. Chan, M. J. Bibby and  
J. A. Goldak

- 195 A software system for determining the preheat temperature required to avoid underbead cracking—I

B. Chan, M. J. Bibby and  
J. A. Goldak

- 203 A software system for computing the HAZ hardness after post weld heat treatment—II

M. D. Pugh, L. C. Zarnon and  
R. A. L. Drew

- 211 Heat treatment of controlled composition Y-SIALON ceramics

I. C. Ozsoy, G. E. Ruddle and  
A. F. Crawley

- 217 Optimum scheduling of a hot rolling process by non-linear programming

S. Lou and D. O. Northwood

- 225 Elevated temperature mechanical properties and dynamic strain aging in pressure vessel quality steel plate

### MATERIALS PROPERTIES AND PROCESSING

H. Soda, F. Chabchoub, S. A. Argyropoulos  
and A. McLean

- 231 Experimental study of the horizontal Ohno continuous casting system

### TECHNICAL NOTE

M. Schierling and R. Harris

- 241 Solid and liquid densities in the aluminium-zinc system

# Canadian Metallurgical Quarterly

---

Volume 31, No. 4, October-December 1992

---

## CONTENTS

### CHEMICAL AND EXTRACTIVE METALLURGY

B. Q. Li

Shize Jin and E. Ghali

S. A. Mikhail and A. H. Webster

### PHYSICAL METALLURGY AND MATERIALS

Aihua Luo and W. V. Youdelis

### MATERIALS PROPERTIES AND PROCESSING

L. J. Yang, R. S. Chandel and  
M. J. Bibby

L. Dong, S. T. Johansen and  
T. A. Engh

243 A Guide to Canadian Graduate Studies in Metallurgy  
and Materials

249 Nucleation mechanism and kinetics of hydrogen  
reduction of nickel from aqueous solutions with  
chromous ions as nucleating agent

259 Influence of some bath additives on the passivation  
of copper anodes in  $\text{CuSO}_4\text{-H}_2\text{SO}_4$  electrolyte

269 Recovery of nickel, cobalt and copper from industrial  
slags—I. Extraction into iron sulphide matte

283 The effects of Be on mechanical properties and fracture  
behaviour of Al-Li alloy 8090

289 The effects of process variables on the bead height  
of submerged-arc weld deposits

299 Mass transfer at gas-liquid interfaces in stirred vessels

i Volume 31 Contents and Author Index

